

FIG.1

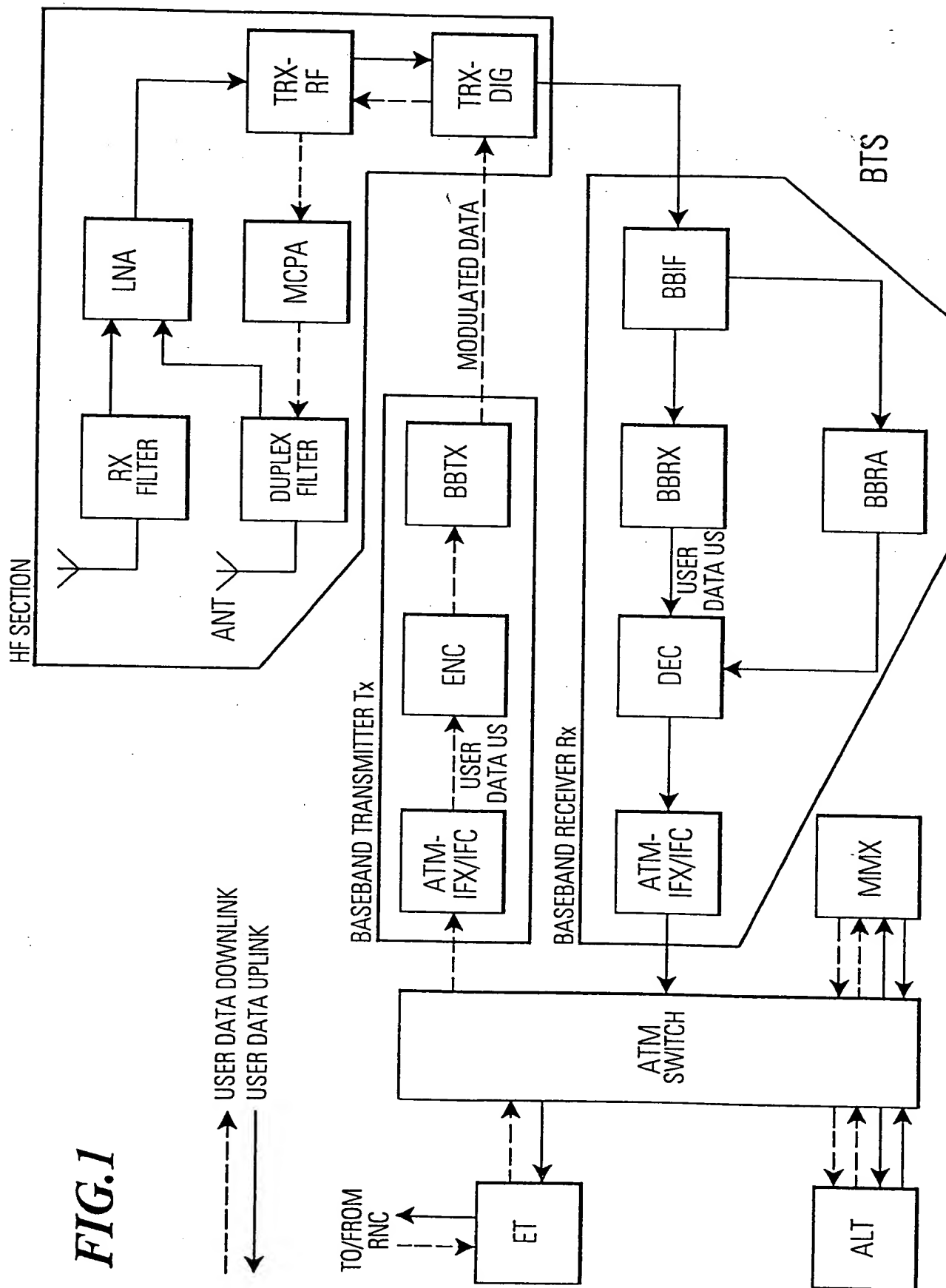


FIG.2

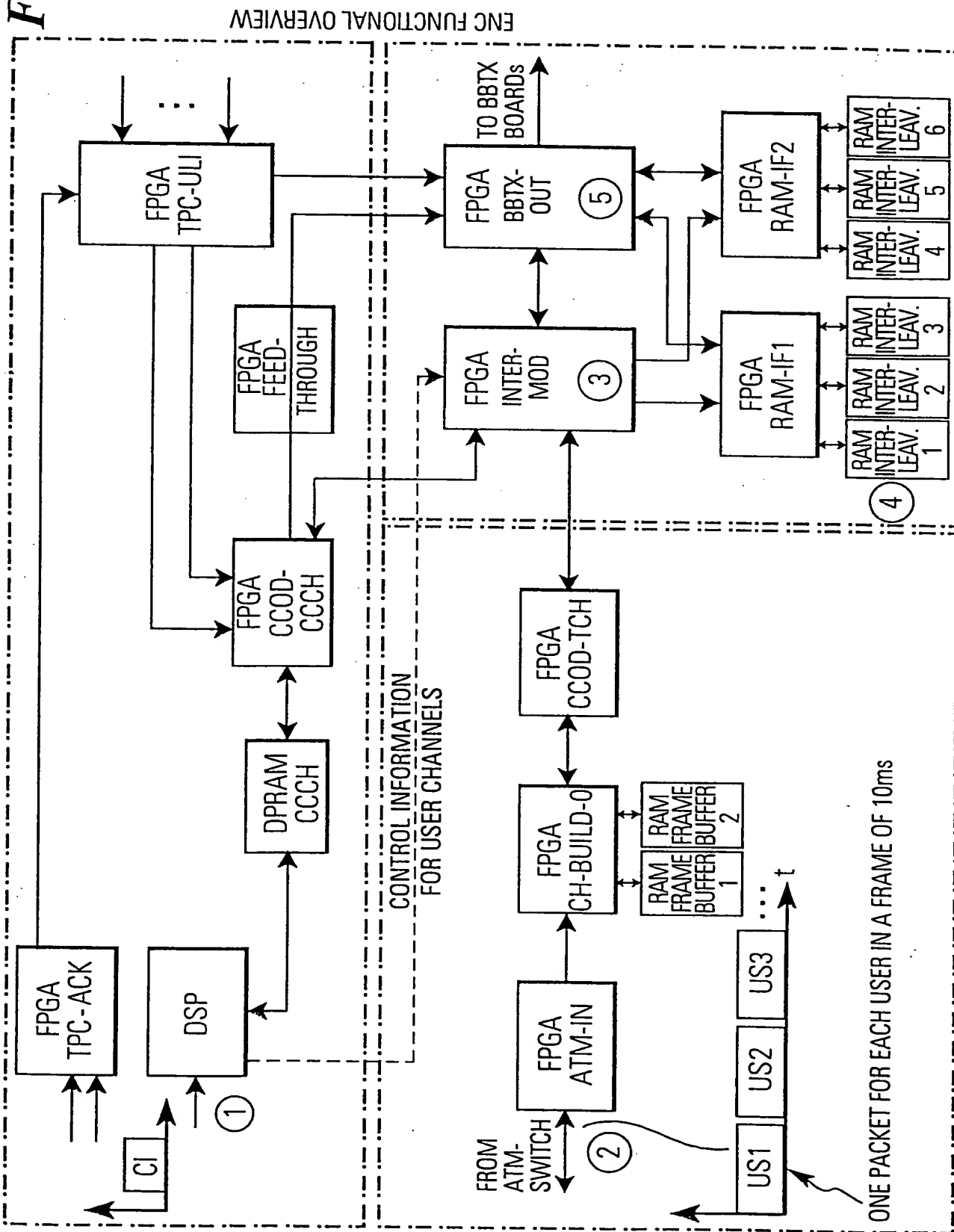


FIG.3

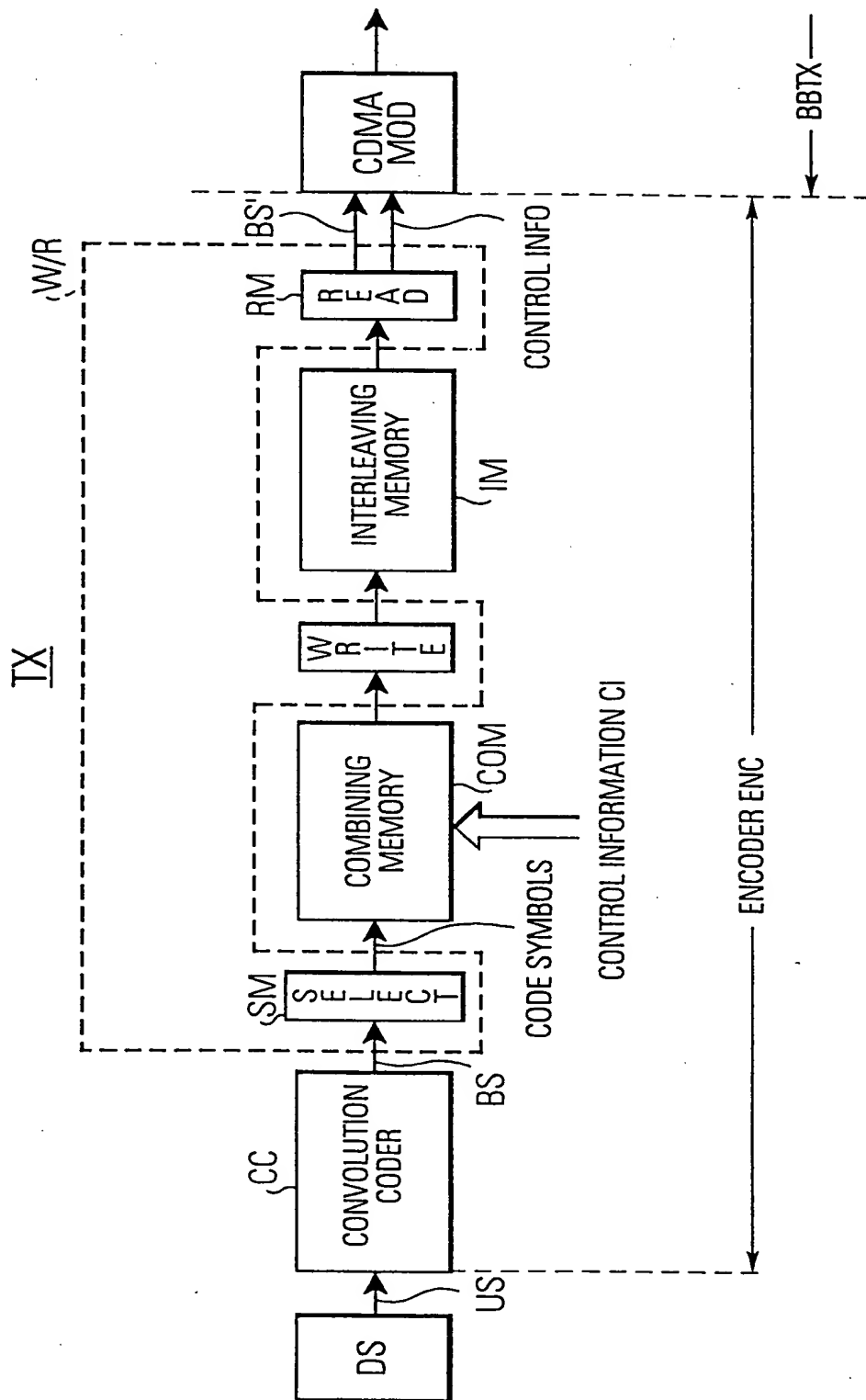


FIG. 4 PRIOR ART

ADDRESSING



DATA BITS		CONTROL BITS			
0	1	0	0	0	0
0	1	0	0	0	1
0	0	1	0	0	1

RAM

1 SYMBOL PER ROW

PRETERMINED WIDTH

FIG. 7

ADDRESSING



POSSIBLE CASES:
2 WIDTH

DATA BITS		& CONTROL BITS		FUNCTION
0	1	0	0	STOP
		0	0	START
		0	0	NORMAL
		0	1	

RAM

FIG.6

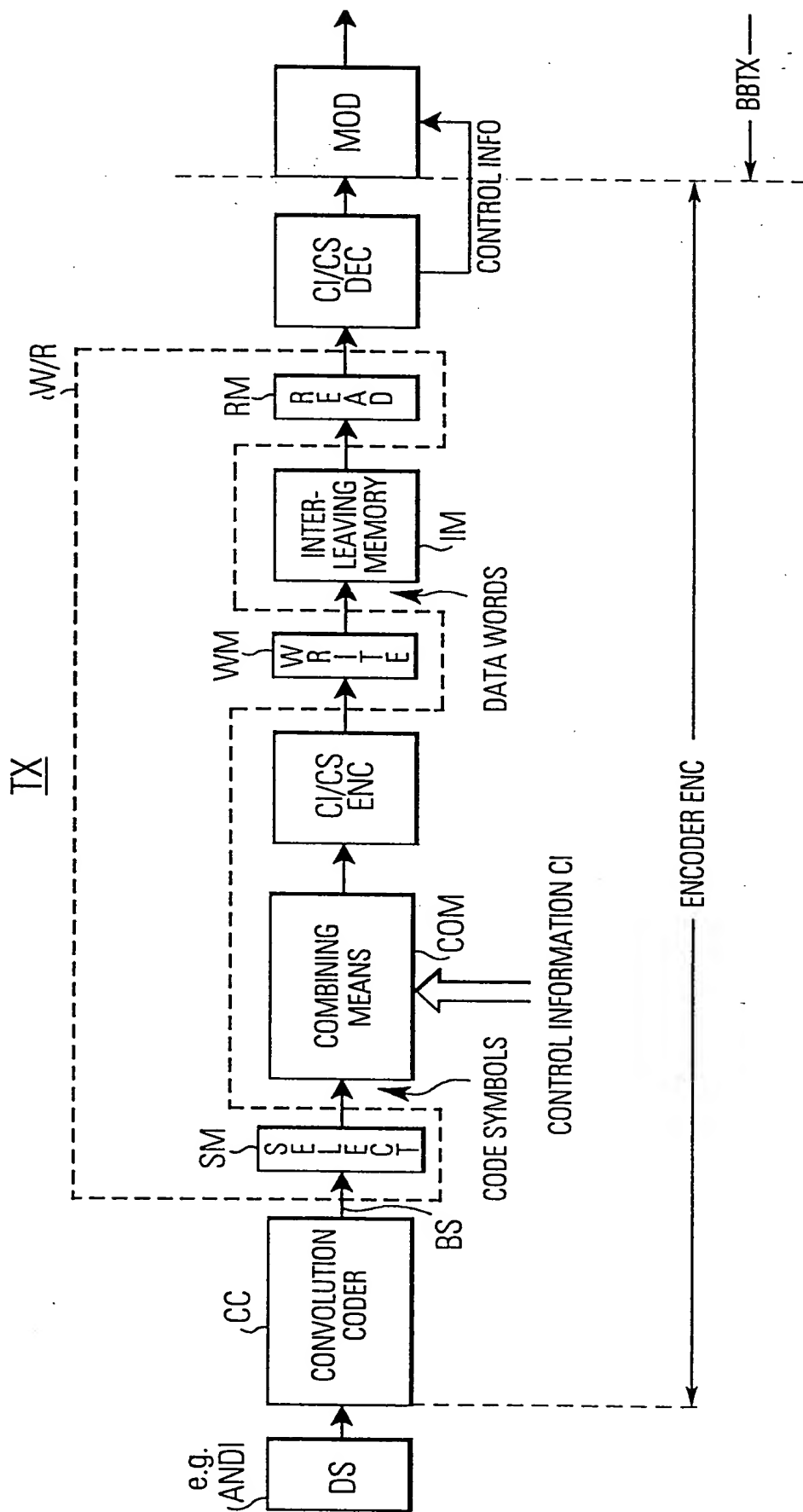


FIG.8

FS	SS	MA	PW	Q	I	ENCODED DATA VALUE(HEX)	FUNCTION
0	0	0	0	X	X	C	POWER OFF
0	0	0	1	0	0	0	NORMAL TRANSMISSION, I=0, Q=0
0	0	0	1	0	1	1	NORMAL TRANSMISSION, I=1, Q=0
0	0	0	1	1	0	2	NORMAL TRANSMISSION, I=0, Q=1
0	0	0	1	1	1	3	NORMAL TRANSMISSION, I=1, Q=1
0	1	0	0	X	X	D	SLOT START, POWER OFF
0	1	0	1	0	0	4	SLOT START, I=0, Q=0
0	1	0	1	0	1	5	SLOT START, I=1, Q=0
0	1	0	1	1	0	6	SLOT START, I=0, Q=1
0	1	0	1	1	1	7	SLOT START, I=1, Q=1
1	X	0	0	X	X	E	FRAME START, POWER OFF
1	X	0	0	0	0	8	FRAME START, I=0, Q=0
1	X	0	0	0	1	9	FRAME START, I=1, Q=0
1	X	0	0	1	0	A	FRAME START, I=0, Q=1
1	X	0	0	1	1	B	FRAME START, I=1, Q=1
X	X	1	1	X	X	F	MARKER FOR SPECIAL SYMBOL

TABLE 1: DATA ENCODING IN EXTERNAL RAM

(FS = FRAME START, SS = SLOT START, MA = MARKER, PW = POWER, X = DONT CARE)

FIG.9

FUNCTION	ENCODED DATA VALUE(HEX)	FS	SS	MA	PW	Q	I
NORMAL TRANSMISSION, I=0, Q=0	0	0	0	0	1	0	0
NORMAL TRANSMISSION, I=1, Q=0	1	0	0	0	1	0	1
NORMAL TRANSMISSION, I=0, Q=1	2	0	0	0	1	1	0
NORMAL TRANSMISSION, I=1, Q=1	3	0	0	0	1	1	1
SLOT START, I=0, Q=0	4	0	1	0	1	0	0
SLOT START, I=1, Q=0	5	0	1	0	1	0	1
SLOT START, I=0, Q=1	6	0	1	0	1	1	0
SLOT START, I=1, Q=1	7	0	1	0	1	1	1
FRAME START, I=0, Q=0	8	1	1	0	1	0	0
FRAME START, I=1, Q=0	9	1	1	0	1	0	1
FRAME START, I=0, Q=1	A	1	1	0	1	1	0
FRAME START, I=1, Q=1	B	1	1	0	1	1	1
POWER OFF	C	0	0	0	0	0	0
SLOT START, POWER OFF	D	0	1	0	0	0	0
FRAME START, POWER OFF	E	1	1	0	0	0	0
MARKER FOR SPECIAL SYMBOL	F	0	0	1	1	1	1

TABLE 2: DATA DECODING

FIG.5 PRIOR ART

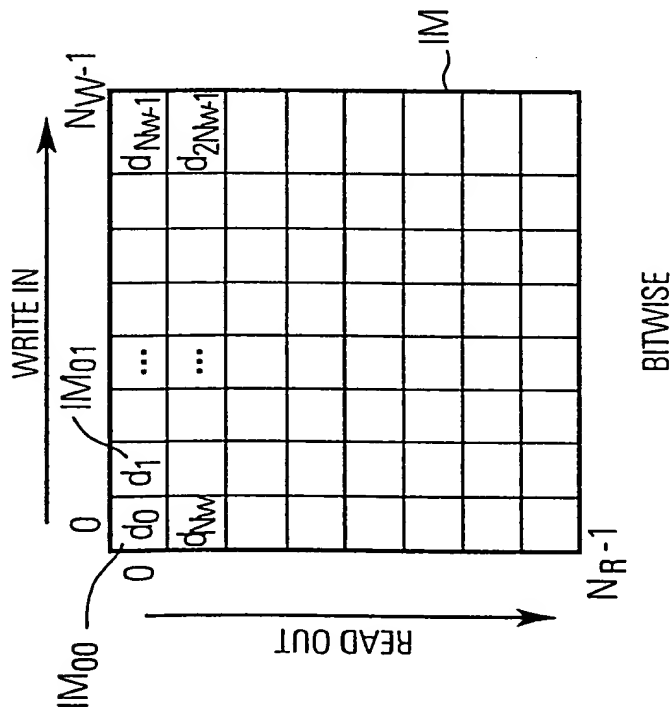
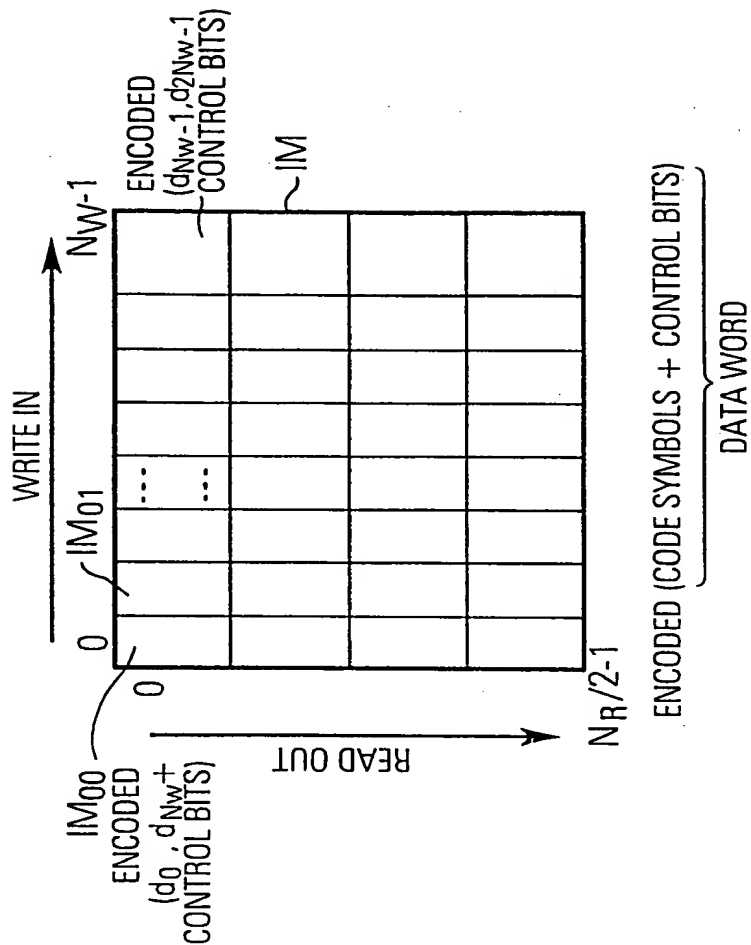


FIG.10



$$n_W + (n_R + n - 1) N_W + n_R N_W (N - 1) = m$$

1) $N_W +$ 2) $= m$		$N = 2(\text{QPSK})$				$N_W = 4$	
		n_W	0	1	2	3	
$n_R = 0$	{		0	1	2	3	$n = 1$
			4	5	6	7	$n = 2$
$n_R = 1$	{		8	9	10	11	$n = 1$
			12	13	14	15	$n = 2$
$n_R = 2$	{		16	17	18	19	$n = 1$
			20	21	22	23	$n = 2$
$n_R = 3$	{		24	25	26	27	$n = 1$
			28	29	30	31	$n = 2$
$n_R = 4$	{		32	33	34	35	$n = 1$
			36	37	38	39	$n = 2$
			40	41	42	43	
				:			

FIG. 11a

ONLY CODE
SYMBOLS ARE
SHOWN

BIT POSITION m
IN INPUT DATA
BIT SEQUENCE

		$N = 4 \text{ (e.g. 16 QAM)}$				
		n_W				$N_W = 4$
		0	1	2	3	
$n_R = 0$	{	0	1	2	3	$n = 1$
		4	5	6	7	$n = 2$
		8	9	10	11	$n = 3$
		12	13	14	15	$n = 4$
$n_R = 1$	{	16	17	18	19	$n = 1$
		20	21	22	23	$n = 2$
		24	25	26	27	$n = 3$
		28	29	30	31	$n = 4$
$n_R = 2$	{	32	33	34	35	$n = 1$
		36	37	38	39	$n = 2$
		40	41	42	43	$n = 3$

FIG. 11b

ONLY CODE
SYMBOLS ARE
SHOWN

FIG.11c

ONLY CODE SYMBOLS ARE SHOWN

$$N = 2 ; N_W = 7$$

	n_W	0	1	2	3	4	5	6
$n_R = 0$		0	1	2	3	4	5	6
		7	8	9	10	11	12	13
$n_R = 1$		14	15	16	17	18	19	20
		21	22	23	24	25	26	27

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FIG. 12

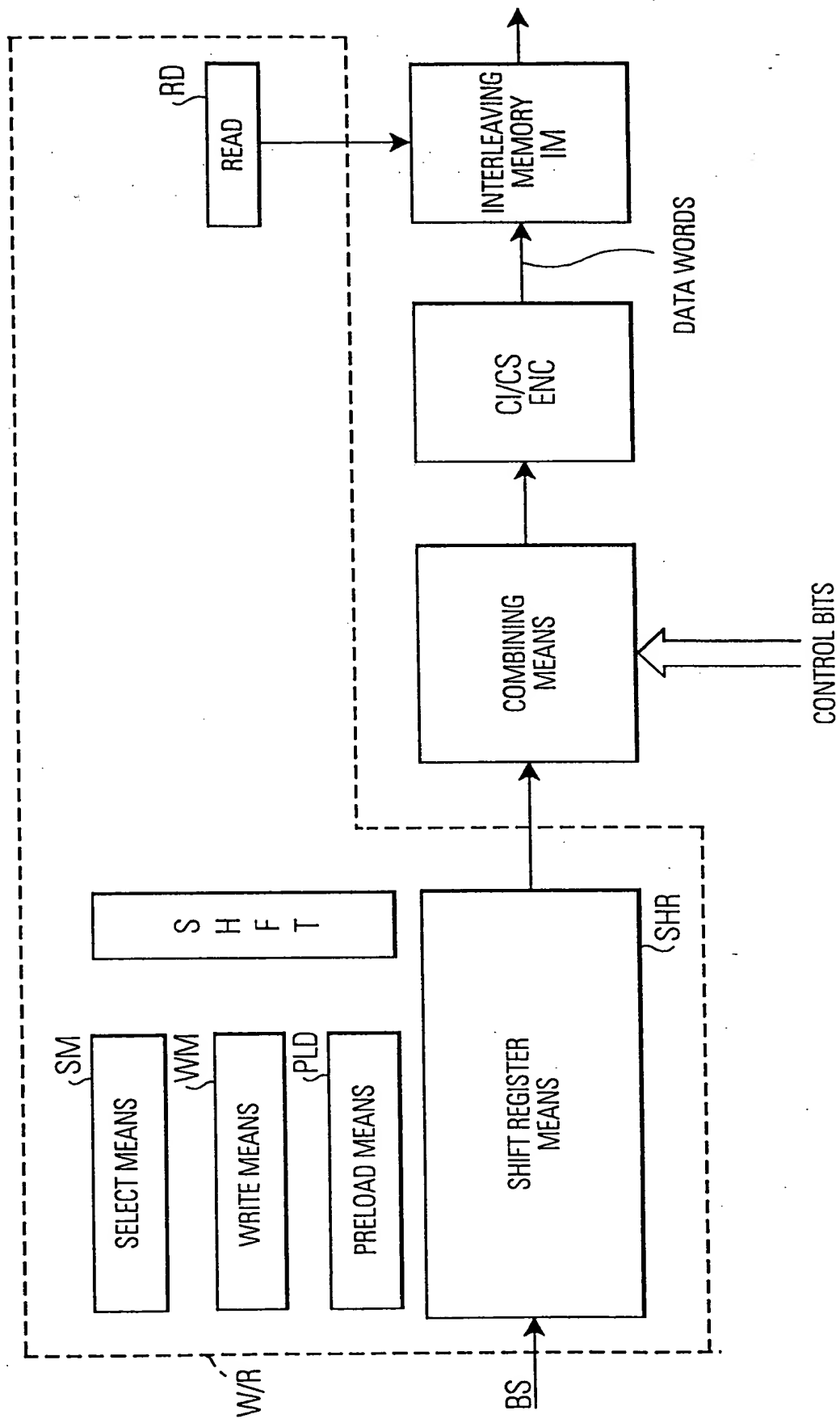


FIG. 13a

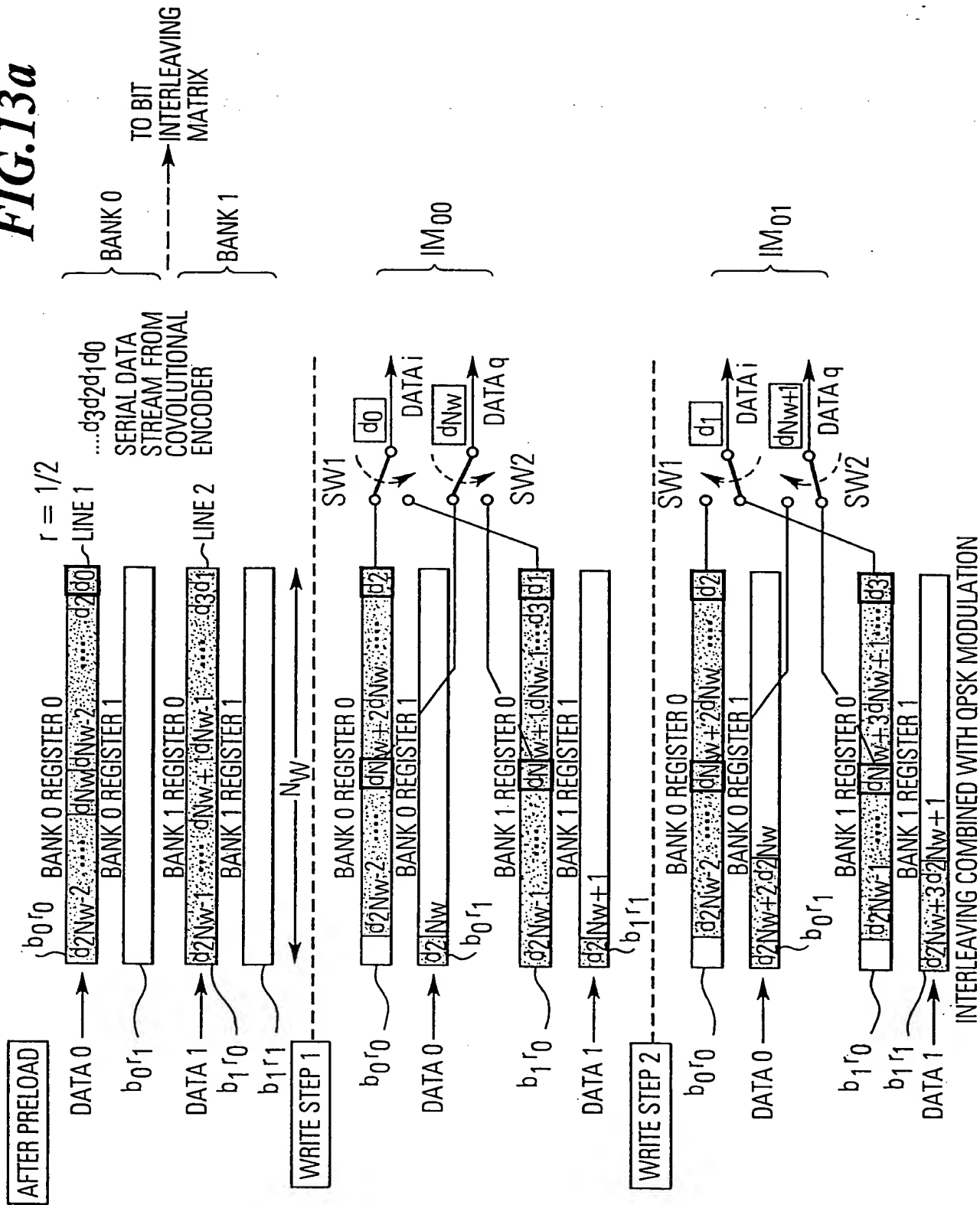


FIG. 13b

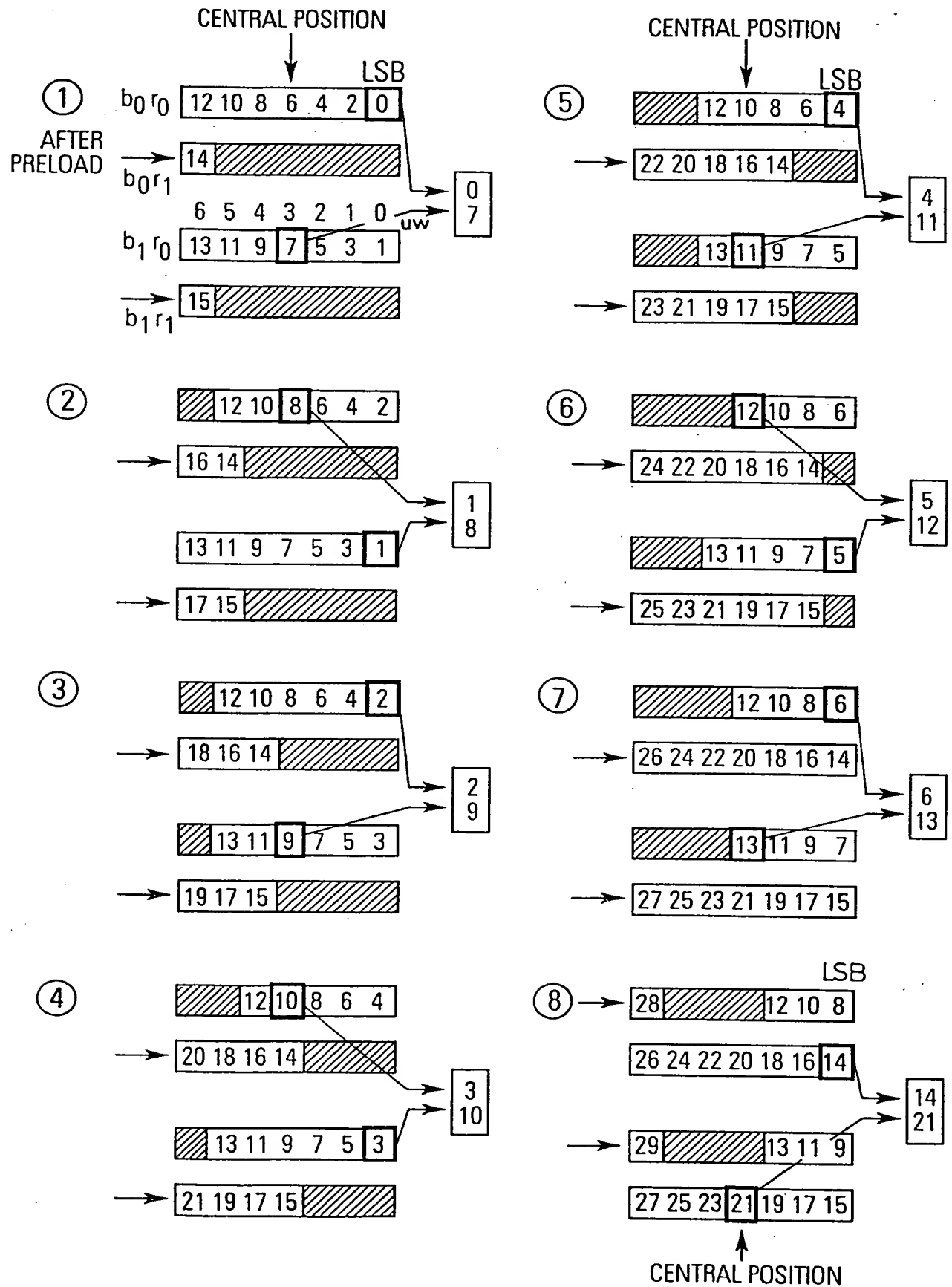
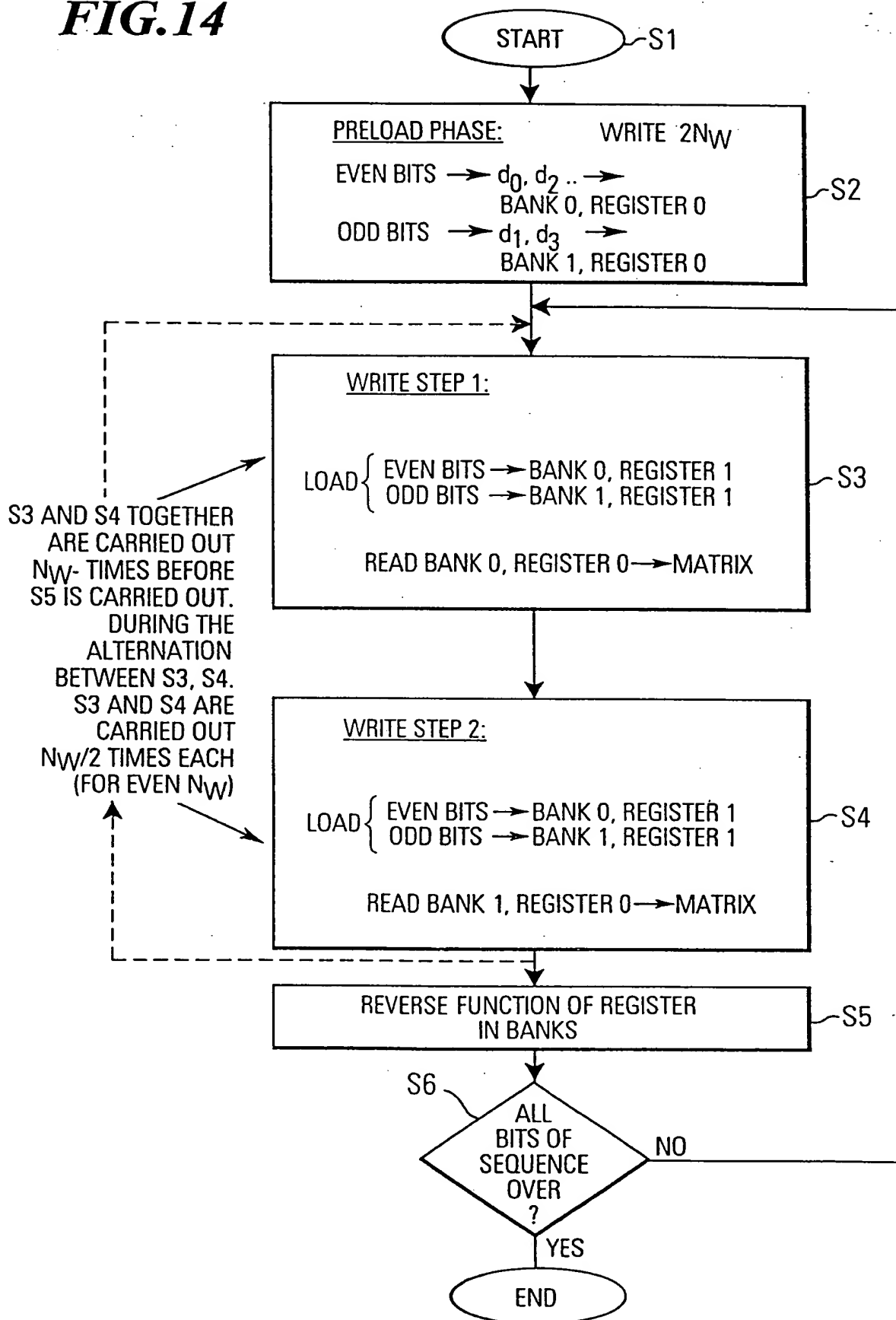


FIG.14



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